ANNUAL REPORT

1961

TOWN OF CONISTON

ANNUAL REPORT

ON

TOWN OF CONISTON

SEWAGE TREATMENT PLANT

1961

OWRC PROJECT - 58-S-8

CONISTON SEWAGE TREATMENT PLANT

OPERATED FOR

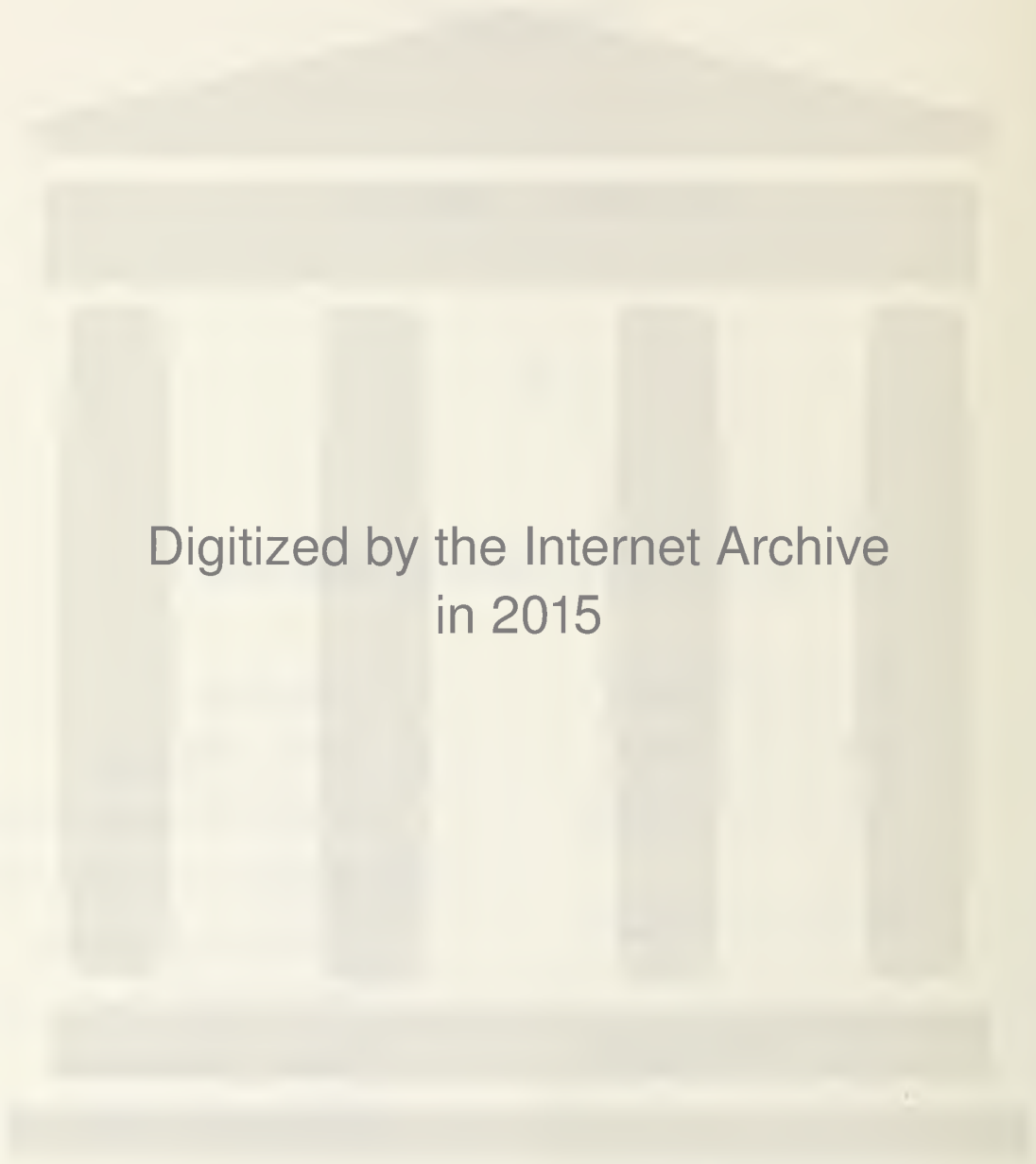
THE TOWN OF CONISTON

BY

THE ONTARIO WATER RESOURCES COMMISSION

Mr. A. M. Snider	-	Chairman
Dr. A. E. Berry	-	General Manager
Mr. D. S. Caverly	-	Assistant General Manager, and Director of Plant Operations
Mr. B. C. Palmer	-	Assistant Director, Division of Plant Operations
Mr. P. M. Higgins	-	Project Engineer, Division of Plant Operations

Prepared by the
Division of Plant Operations



CONISTON ANNUAL REPORT - 1961

In June, 1957, the Ontario Water Resources Commission entered into an agreement with the Town of Coniston for the construction of a sewage disposal system. The system, designed by E. M. Powell & Associates, Consulting Engineers, consisted of five sewage pumping stations, sanitary sewers and an activated sludge sewage treatment plant. Under the supervision of the Consulting Engineers, Carrington Construction Co. Ltd. completed the project at a total cost of $413,370.94.

On December 5th, 1958, the plant was put into temporary operation and on April 30, 1959 came into full operation.

PROJECT DESCRIPTION

Collection System and Plant

The sewage of the municipality is collected by a system of sanitary sewers, ejector stations and finally an underground lift station which pumps the sewage to the influent works of the plant, from which it flows through the plant by gravity.

The sewer system is made up of:

2995 feet of 10" ø sewer pipe,
21,193 feet of 8" ø sewer pipe,
8,758 feet of 6" ø sewer pipe,
6,157 feet of 4" ø sewer pipe,
296 - 6" double service connections,
76 - 4" single service connections,
282 feet of 8" ø force main,
3,862 feet of 6" ø force main,
106 manholes.

The sewers are maintained by the Town's Works Department, coupled with periodic manhole inspections by the sewage plant operator.

All of the lift stations are automatically controlled, cutting on and off as the level in the wet well rises and falls.

Lift Station #1, located at the northeast corner of Mitchell and William Streets, consists of an underground wet well and dry well with one 60 gallons/minute capacity pneumatic ejector. The ejector is operated by a 2½ H.P. motor and compressor unit.

Lift Stations #2, 3 and 4, located at the southwest corner of Nickel and William Streets, the southwest corner of Horace Avenue and Caruso Street, and the southwest corner of Concession Street and Forth Avenue, respectively, are similar to Station #1 only two 60 gallons/minute pneumatic ejectors are included instead of one.

Station #5, located just east of the sewage plant consists of a dry well and wet well with two vertical drive centrifugal pumps which handle all of the incoming sewage to the plant.

The plant is of the activated sludge type and was designed for a dry weather flow of 150,000 gallons per day or a population figure of 2,500 people at 60 gallons/capita/day. Primary treatment facilities can treat 260,000 gallons/day.

A screening chamber is provided in the influent works for removing floating rags, papers and other large solids, together with inorganic solids such as sand. The screening chamber is flushed out periodically to the sludge drying beds.

The primary settling tank is 24'-0" in diameter, having a volume of 18,400 gallons and giving a retention period of 2.94 hours. The raw sludge, made up of organic settleable solids, is drawn off to the primary digester.

The tank has a cross-sectional area of 452 square feet and there are 88 lineal feet of overflow weir giving an overflow rate of 332 gallons/square feet of tank/day or 1700 gallons/lineal foot of overflow weir/day.

The volume of the aeration tank is 55,800 gallons, giving a 7.15 hour retention when it is assumed that 25% sludge is returned. The tank is equipped with a 6'-0" diameter high intensity aerating cone driven by a self-contained motor and drive unit.

Final settling is provided in a 28'-0" diameter, type "F" Simplex Settling Tank (Ames Crosta Mills) having a volume of 25,000 gallons which is equivalent to 3.2 hours retention at 125% of dry weather flow. The tank has a cross-sectional area of 616 square feet and weir length of 208 feet. This provides an overflow rate of 572 gallons/square foot/day or 720 gallons/lineal foot of overflow weir/day.

Activated sludge is returned to the aeration section by means of a 3" horizontal spindle pump.

The plant is equipped with two stage digestion having a combined capacity of 7170 cubic feet or a design rating of 2.74 cubic feet/capita.

Sludge is drawn off from the secondary digester and run to

the sludge drying beds. There are six drying beds, 20' x 30' giving a surface area of 3600 square feet or a design rating of 1.39 square feet/capita. The drying beds are underdrained with the filtrate running to the wet well of the #5 lift station. The beds are manually cleaned and the dried sludge used as soil conditioner by the local residents.

All of the equipment in the plant was supplied by the Ames Crosta Mills and Co., Ltd., of Heywood, Lancashire, England.

Effluent of the plant is chlorinated during the summer months as required by the Sanitary Engineering Division of the OWRC. Coniston Creek is the receiving stream.

Plant Operation

The plant was operated during the year 1961 by Mr. H. J. LeClair. During the interval when Mr. LeClair was attending courses in Toronto, the plant was looked after by Mr. J. Leonard and Mr. K. Glibbery, both of Coniston.

On November 9th, 1961, interviews for the purpose of locating a plant operator replacement were held with Mr. D. S. Caverly, Director of Plant Operations, Mr. A. W. Uren, Personnel Officer, and Mr. P. M. Higgins, Project Engineer, present. Mr. K. Glibbery was selected as the successful candidate to take over operation of the Coniston sewerage system when Mr. H. J. LeClair was taken on the Head Office staff.

Mr. LeClair's duties included operation and maintenance of the sewage treatment plant, along with twice daily inspections

of the pumping stations. , The plant is normally under 44 hour supervision a week, or 8 hours a day 5 days a week with 2 hours supervision on each of Saturday and Sunday.

During the year of 1961, operaticnal problems were reduced to a minimum. Foaming in the aeration section was a minor problem for the operator. A spray system, with sprays located in each of the four corners of the aeration tank would eliminate this problem.

Continual and rapid cycling of the ejectors in lift station #2 and #4 caused severe wear on the starters in those stations. During the year Mr. LeClair modified both of these stations so that each cycle now lasts fifteen minutes in lieu of the original one minute cycling period. Under the new arrangement the starter wear appears to have been reduced considerably. A series of tests run on the #2 station indicated that the station capacity had been increased possibly in the range of 20%-30%.

In the field of qualtiy control, sampling was suspended for a period during the year while Mr. LeClair effected the many modifications in the electrical wiring of both the lift stations and the plant.

During 1962, Mr. Glibbery will be taking samples twice a month at the various stages of treatment through the plant to determine plant efficiencies as well as creek sampling for bacteriological counts.

Disposal of sludge during the winter period has posed somewhat of a problem at the plant. Sludge drying beds are not

satisfactory during wet or extremely cold periods, therefore, the possibility of liquid sludge hauling has been investigated.

Operating Costs

The cost of operating the Coniston Sewage Treatment Plant was $9,294.33 during 1961. This amounts to a breakdown of costs as follows:

Payroll	51.7%
Fuel	4.4
Power	10.7
Chemicals	4.6
General Supplies	5.9
Equipment	5.8
Repairs and Maintenance	1.0
Sundry	15.9

The sundry figure includes an insurance premium covering a three year period.

The cost per person for 1961 operation was $3.48.

The following is a cost estimate for 1962:

Payroll	4,200.00
Fuel	600.00
Power	1,100.00
Chemical	580.00
Equipment	400.00
Repairs & Maintenance	300.00
Sundry	500.00
Contingency	850.00
	$ 9,330.00

This would amount to a per capita cost of $3.62.

Capital Cost Comparison	1961	1962
Debt Retirement	9,456.00	9,478.00
Reserve	3,648.00	3,648.00
Interest Charges	26,361.00	24,492.00
TOTAL	$ 39,425.00	$ 37,618.00

RECOMMENDATIONS

Liquid Sludge Hauling

Facilities should be provided for disposal of liquid sludge. It has been suggested that a 500 gallon tank, owned by the municipality, be made available for hauling of liquid sludge.

The tank could be conveyed by means of a 5 ton farm wagon. The wagon would cost in the neighbourhood of $300.00. A loading ramp would have to be facilitated in the area of the grit bed and piping extension made for tank loading.

The digested sludge could be used in the Town's program of land reclamation.

High Level Alarms

All of the pumping stations should be fitted with a high water alarm system. The most suitable system would consist of red warning lights at each station with a signal telemetered to the Police Station. Such a system would indicate failure of a pumping station and should eliminate flooding of basements, provided remedial action is immediately taken.

The total cost of this installation would be around $200.00 with a monthly rental of $6.95 for Bell Telephone facilities.

Spare Parts for Plant

As almost all of the plant equipment is manufactured by Ames Crosta Mills of England, it would be advisable that parts which are subjected to continual wear be carried in duplicate.

The total cost of the spare parts required would be $496.38.

Total Flow Meter

Some method of measuring the total plant flow would be of considerable benefit both to the plant operator and to any statistical data compiled.

The above mentioned recommendations should be proceeded with during 1962. Their addition will make for more flexible and effective operation of the plant.